

**FEDERAL REPUBLIC
OF GERMANY**

**GERMAN LAYING-OPEN SPECIFICATION
101 13 227 A1**

(Federal Eagle)

File Number: 101 13 227.1

Day of Application: 3/19/2001

GERMAN PATENT

Day on which this Application has been

AND

laid open for public inspection: 9/26/2002

TRADEMARK OFFICE

Applicant:

BASF AG, 67063 Ludwigshafen,
Germany

Inventors:

Röckel, Harald, Dr., 67435 Neustadt,
Germany; Zhao, Cheng-Le, Dr.,
68723 Schwetzingen, Germany;
Laubender, Matthias, Dr., 67105
Schifferstadt, Germany

Representatives:

Kinzebach and Partners, 81679 Munich

**The following Statements are drawn from the Documents as filed
by Applicant**

Aqueous Coating Mass

The present Invention relates to an aqueous coating mass, at least one polymer dispersed in the aqueous phase and of at least one ethylenically unsaturated monomer and at least one alcohol alkoxylate, the alkoxylate chain of which is structured of from 5 to 100 alkylene oxide units.

[0001] The present Invention relates to an aqueous coating mass, especially latex paints, which mass results in coatings of improved abrasion wear resistance and enhanced gloss.

.....

[0038] According to the Invention, the Polymers P are, in form of their aqueous polymerisate dispersions, used as binding agents in pigment-containing preparations serving for a coating of substrates. Hereby, e. g. dispersed plastic material plasters, tile pastes, paints, gasketing masses, or sealing masses, especially for porous structural members, are meant.

[0039] A preferred embodiment of the present Invention relates to preparations in form of dispersed paints.

[0040] The coating masses according to the Invention, preferably the dispersed paints, contain, as a rule, from 30 to 75 % by wt and preferably from 40 to 65 % by wt of non-volatile constituents. Hereby, all those constituents of the Preparation are meant which are not water but at least the total quantity of binding agent, filling material, pigment, difficultly volatile solvents (boiling point above 220°C), e. g. softeners, and polymeric auxiliary agents. The proportions thereof amount to about:

- i) from 5 to 90 % by wt, preferably from 10 to 60 % by wt, of solid binding agent constituents (= Polymer P),
- ii) from 5 to 85 % by wt, preferably from 10 to 60 % by wt, of at least one inorganic pigment,
- iii) from 0 to 85 % by wt, preferably from 20 to 70 % by wt, of inorganic filling materials, and

iv) from 0.1 to 40 % by wt, preferably from 0.5 to 15 % by wt, of usual auxiliary agents.

.....

[0042] Pigments typical of the Preparations according to the Invention, especially for dispersed paints, are e. g. titanium dioxide, preferably in rutile form, barium sulphate, zinc oxide, zinc sulphide, basic lead carbonate, antimony trioxide, lithopone (zinc sulphide + barium sulphate). The Preparations may, however, also contain coloured pigments, e. g. iron oxides, soot, graphite, luminescent pigments, zinc yellow, zinc green, ultramarine blue, manganese black, antimony black, manganese violet, Paris Blue, or Schweinfurt Green. Apart from the inorganic Pigments, the Preparations according to the Invention may also contain organic paint pigments, e. g. sepia, gamboge, Kassel Brown, toluidine red, parared, Hansa Yellow, indigo, azo dyestuffs, anthraquinonoid and indigoid dyestuffs as well as dioxazine, quinacridone, phthalocyanine, isoindolinone, and metal complex pigments.

[0043] Suitable filling materials basically encompass aluminosilicates such as feldspaths, silicates like kaoline, talcum, mica, magnesite, alkaline-earth carbonates like calcium carbonate, e. g. in form of calcite or chalk, magnesium carbonate, dolomite, alkaline-earth sulphates like calcium sulphate, silicon dioxide, etc. The filling materials may be used as individual components. However, mixtures of filling materials have especially proven their worth in practice, e. g. calcium carbonate/kaoline, calcium carbonate/talcum. Dispersed plasters may also contain coarser loading materials such as sands or granular sandstone materials. In dispersed paints, filling materials of small particle size are naturally given preference.

[0044] For enhancing the covering power and for saving white pigments, filling materials of small particle size, e. g. calcium carbonate of small particle size or mixtures of various calcium carbonates of different particle size are frequently used in the preferred dispersed paints. For adjusting the

covering power of the hue and the colour depth, mixtures of paint pigments and filling materials are preferably used.

[0045] The usual auxiliary agents iv) are dispersants such as sodium, potassium or ammonium polyphosphates, alkaline metal and ammonium salts of polyacrylic acids and of polymaleic acid, polyphosphonates such as 1-hydroxyethane-1,1-diphosphonic-acidic sodium as well as naphthalene-sulphonic acid salts, in particular the sodium salts thereof. The dispersants are, as a rule, employed in a quantity of from 0.1 to 0.6 % by wt, related to the total weight of the dispersed paint.

[0046] The auxiliary agents iv), furthermore, possibly also encompass thickeners, e. g. cellulose derivatives such as methyl cellulose, hydroxyethylcellulose, and carboxymethylcellulose; moreover casein, gum arabic, tragacanth gum, starch, sodium alginate, polyvinyl alcohol, polyvinylpyrrolidone, sodium polyacrylates, water-soluble copolymerisates on acrylic and methyl-acrylic acid basis such as acrylic acid/acrylamide and methyl-acrylic acid/acrylic ester copolymerisates and so-called associative thickeners, e. g. styrene-maleic acid anhydride polymerisates or, preferably, hydrophobically modified polyether urethanes such as are described e. g. by N. Chen et al. in "J. Coatings Technol", Vol 69, No 867, 1997, P 73 and by R. D. Hester et al. in "J. Coatings Technology", Vol 69, No 864, 1997, 109, their Disclosure being, herewith, made reference to in full.

[0047] Inorganic thickeners, e. g. bentonites or hectorite, may be used as well. In general, thickeners are used in quantities of from 0.1 to 3 % by wt, preferably from 0.1 to 1 % by wt, related to the total weight of the aqueous Preparation. The auxiliary agents iv), furthermore, also encompass, as a rule, defoamers, preserving or hydrophobing agents, biocides, fibres, or other constituents.

[0048] The coating masses for adjusting the film-forming characteristics of the binding agent polymerisates may also contain so-called film-forming consolidating agents (softeners), e. g. ethylene glycol, propylene glycol, butylene glycol, hexylene glycol, alkyl ethers and alkyl ether esters of glycols and polyglycols, e. g. diethylene glycol monoethyl ether, diethylene glycol monoethyl ether acetate, diethylene glycol monobutylether, hexylene glycol diacetate, propylene glycol monoethyl ether, propylene monophenyl ether, propylene monobutyl ether, and propylene monopropyl ether, dipropylene glycol monomethyl ether, dipropylene glycol mono-n-butyl ether, tripropylene glycol mono-n-butyl ether, and the acetates of the aforementioned monoalkyl ethers, e. g. butoxybutyl acetate, moreover alkyl esters of aliphatic mono and dicarboxylic acids, e. g. TexanolTM of Eastman, or technical mixtures of dibutyl esters of the succinic acid, the glutaric acid and the adipic acid. Film-forming auxiliary agents are usually employed in quantities of from 0.1 to 20 % by wt, related to the Polymer P included in the Preparation, so that the latter has a minimum film-forming temperature of less than 15°C and, preferably, within a range of from 0 to 10°C.

.....

[0050] The coating masses according to the Invention are stable, fluid systems that can be employed for coating a plurality of substrates. In accordance therewith, the present Invention also relates to a method of coating substrates. Suitable substrates are e. g. wood, concrete, metal, glass, ceramics, plastic material, plasters, wallpapers, painted, primed or decayed grounds. Application of the coating masses to the substrate to be coated is effected in a way dependent on the form of the coating masses and can, depending on viscosity and pigment content of the Preparation as well as the substrate, be carried out by means of rollers, brushes, squeegees or as spray.